

August 22, 2007

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: 10 CFR 50.46 Annual Report

References: 1. Letter from Pamela B. Cowan (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission, "10 CFR 50.46 30-Day Report," dated August 22, 2006

The purpose of this letter is to transmit the 10 CFR 50.46 reporting information for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The previous 50.46 report for PBAPS, Units 2 and 3 (Reference 1) provided the cumulative Peak Cladding Temperature (PCT) errors for the most recent fuel designs through August 22, 2006.

Since the Reference 1 report was issued, no vendor notifications of Emergency Core Cooling System (ECCS) model error/changes that are applicable to PBAPS, Units 2 and 3 have been issued. Also, no ECCS-related changes or modifications have occurred at PBAPS, Units 2 and 3 that affect the assumptions of the ECCS analyses.

Three attachments are included with this letter that provide the current PBAPS, Units 2 and 3 10 CFR 50.46 status. Attachments 1 and 2, "Peak Cladding Temperature Rack-Up Sheet," provide information regarding the PCT for the limiting Large Break Loss of

USNRC
PBAPS 10 CFR 50.46 Annual Report
August 22, 2007
Page 2

Coolant Accident (LOCA) Analysis evaluations for PBAPS, Units 2 and 3, respectively. Attachment 3, "Assessment Notes," contains a detailed description for each change or error reported.

If you have any questions, please contact Tom Loomis at 610-765-5510.

Very truly yours,



David P. Helker
Manager – Licensing

Attachments: 1) Peak Cladding Temperature Rack-Up Sheet (Peach Bottom Atomic Power Station , Unit 2)
2) Peak Cladding Temperature Rack-Up Sheet (Peach Bottom Atomic Power Station , Unit 3)
3) Assessment Notes

cc: S. J. Collins, USNRC Administrator, Region I
J. Hughey, USNRC Project Manager, PBAPS
F. Bowers, USNRC Senior Resident Inspector, PBAPS

ATTACHMENT 1

10 CFR 50.46

**“Acceptance criteria for emergency core cooling systems
for light-water nuclear power reactors”**

**Report of the Emergency Core Cooling System
Evaluation Model Changes and Errors**

Assessments as of August 22, 2007

Peak Cladding Temperature Rack-Up Sheet

Peach Bottom Atomic Power Station, Unit 2

PLANT NAME: Peach Bottom Unit 2
ECCS EVALUATION MODEL: SAFER/GESTR-LOCA
REPORT REVISION DATE: 08/22/07
CURRENT OPERATING CYCLE: 17

ANALYSIS OF RECORD

Evaluation Model:

1. NEDC-23785-1-PA Rev. 1, "The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-Of-Coolant Accident Volume II, SAFER – Long Term Inventory Model for BWR Loss-Of-Coolant Analysis," October 1984.
2. NEDC-30996P-A, "SAFER Model for Evaluation of Loss-of-Coolant Accidents for Jet Pump and Non-jet Pump Plants, Volume I, SAFER – Long Term Inventory Model for BWR Loss-of-Coolant Analysis," October 1987.
3. NEDC-32950P, "Compilation of Improvements to GENE's SAFER ECCS-LOCA Evaluation Model," January 2000.
4. NEDC-23785-1-PA Rev. 1, "The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-Of-Coolant Accident Volume III, SAFER/GESTR Application Methodology," October 1984.
(Jet Pump Plant – SAFER)

Calculations:

1. "Peach Bottom Atomic Power Station, Units 2 and 3 SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis", NEDC-32163P, January 1993.
2. "Peach Bottom Atomic Power Station ECCS-LOCA Evaluation for GE14", General Electric Company, GENE-J11-03716-09-02P, July 2000.

Fuel Analyzed in Calculations: P8x8R, GE9, GE11/13 and GE14

Limiting Fuel Type: GE14 (Note: P8x8R, GE9 and GE11/GE13 are no longer in operation and are not considered for defining the limiting fuel type)

Limiting Single Failure: Battery Failure

Limiting Break Size and Location: 0.08 ft² Small Break in a Recirculation Discharge Pipe

Reference Peak Cladding Temperature (PCT) – GE14

PCT = 1450°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

10 CFR 50.46 Report dated June 4, 2001 (See Note 1)	GE14 Δ PCT = 55°F
10 CFR 50.46 Report dated December 18, 2002 (See Note 2)	GE14 Δ PCT = 45°F
10 CFR 50.46 Report dated December 03, 2004 (See Note 3)	GE14 Δ PCT = 0°F
10 CFR 50.46 Report dated December 01, 2005 (See Note 4)	GE14 Δ PCT = 0°F
10 CFR 50.46 Report dated August 22, 2006 (See Note 5)	GE14 Δ PCT = 150°F
Net PCT (GE14)	1700 °F

B. CURRENT LOCA MODEL ASSESSMENTS

None	GE14 Δ PCT = 0°F
Total PCT change from current assessments (GE14)	$\Sigma \Delta$ PCT = 0°F
Cumulative PCT change from current assessments (GE14)	$\Sigma \Delta$ PCT = 0°F
Net PCT (GE14)	1700 °F

ATTACHMENT 2

10 CFR 50.46

**“Acceptance criteria for emergency core cooling systems
for light-water nuclear power reactors”**

**Report of the Emergency Core Cooling System
Evaluation Model Changes and Errors**

Assessments as of August 22, 2007

Peak Cladding Temperature Rack-Up Sheet

Peach Bottom Atomic Power Station, Unit 3

PLANT NAME: Peach Bottom Unit 3
ECCS EVALUATION MODEL: SAFER/GESTR-LOCA
REPORT REVISION DATE: 08/22/07
CURRENT OPERATING CYCLE: 16

ANALYSIS OF RECORD

Evaluation Model:

1. NEDC-23785-1-PA Rev. 1, "The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-Of-Coolant Accident Volume II, SAFER – Long Term Inventory Model for BWR Loss-Of-Coolant Analysis," October 1984.
2. NEDC-30996P-A, "SAFER Model for Evaluation of Loss-of-Coolant Accidents for Jet Pump and Non-jet Pump Plants, Volume I, SAFER – Long Term Inventory Model for BWR Loss-of-Coolant Analysis," October 1987.
3. NEDC-32950P, "Compilation of Improvements to GENE's SAFER ECCS-LOCA Evaluation Model," January 2000.
4. NEDC-23785-1-PA Rev. 1, "The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-Of-Coolant Accident Volume III, SAFER/GESTR Application Methodology," October 1984.
(Jet Pump Plant – SAFER)

Calculations:

1. "Peach Bottom Atomic Power Station, Units 2 and 3 SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis ", NEDC-32163P, January 1993.
2. "Peach Bottom Atomic Power Station ECCS-LOCA Evaluation for GE14", General Electric Company, GENE-J11-03716-09-02P, July 2000.

Fuel Analyzed in Calculations: P8x8R, GE9, GE11/13 and GE14

Limiting Fuel Type: GE14 (Note: P8x8R, GE9 and GE11/GE13 are no longer in operation and are not considered for defining the limiting fuel type)

Limiting Single Failure: Battery Failure

Limiting Break Size and Location: 0.08 ft² Small Break in a Recirculation Discharge Pipe

Reference Peak Cladding Temperature (PCT) – GE14

PCT = 1450°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

10 CFR 50.46 Report dated June 4, 2001 (See Note 1)	GE14 Δ PCT = 55°F
10 CFR 50.46 Report dated December 18, 2002 (See Note 2)	GE14 Δ PCT = 45°F
10 CFR 50.46 Report dated December 03, 2004 (See Note 3)	GE14 Δ PCT = 0°F
10 CFR 50.46 Report dated December 01, 2005 (See Note 4)	GE14 Δ PCT = 0°F
10 CFR 50.46 Report dated August 22, 2006 (See Note 5)	GE14 Δ PCT = 150°F
Net PCT (GE14)	1700 °F

B. CURRENT LOCA MODEL ASSESSMENTS

None	GE14 Δ PCT = 0°F
Total PCT change from current assessments (GE14)	$\Sigma \Delta$ PCT = 0°F
Cumulative PCT change from current assessments (GE14)	$\Sigma \Delta$ PCT = 0°F
Net PCT (GE14)	1700 °F

ATTACHMENT 3

10 CFR 50.46

**“Acceptance criteria for emergency core cooling systems
for light-water nuclear power reactors”**

**Report of the Emergency Core Cooling System Evaluation Model Changes and
Errors**

Assessment Notes

Peach Bottom Atomic Power Station, Units 2 and 3

1. Prior LOCA Assessment

The referenced letter reported two GE LOCA errors related to a SAFER condensation error and a SAFER pressure rate error. The PCT impact for the new errors was determined to be 45⁰F and 10⁰F, respectively. These PCT errors applied to all fuel types. This letter constituted a 30-Day report. The total PCT impact of these errors on GE14 fuel was determined to be 55⁰F.

[Reference: Letter from J. A. Hutton (PECO Nuclear) to U.S. NRC, "Peach Bottom Atomic Power Station, Units 2 and 3 10 CFR 50.46 Reporting Requirements", dated June 4, 2001.]

2. Prior LOCA Assessment

The referenced letter provided the annual 50.46 report for Units 2 and 3. This letter reported GE LOCA errors related to a SAFER core spray sparger elevation error and a SAFER bulk water level error. The PCT impact for the new errors was determined to be 40⁰F and 5⁰F, respectively. These PCT errors applied to all fuel types. The total PCT impact of these errors on GE14 fuel was determined to be 45⁰F.

[Reference: Letter from Michael P. Gallagher (Exelon) to U.S. NRC, "10 CFR 50.46 Reporting Requirements", dated December 18, 2002.]

3. Prior LOCA Assessment

The referenced letter provided the annual 50.46 report for Units 2 and 3. This letter reported GE LOCA errors related to a GESTR file interpolation error, a SAFER computer platform change, a WEVOL S1 volume error, a SAFER level/volume table error, a SAFER separator pressure drop error and a new heat source. The PCT impact for the new errors was determined to be 0⁰F for each error. The total PCT impact of these errors on GE14 fuel was determined to be 0⁰F.

[Reference: Letter from Michael P. Gallagher (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "10 CFR 50.46 Annual Report", dated December 03, 2004.]

4. Prior LOCA Assessment

The referenced letter provided the annual 50.46 report for Units 2 and 3. This letter reported that no vendor 50.46 change/error notifications had been received since the last annual report. Therefore, the annual PCT change for GE14 fuel was reported as 0⁰F.

[Reference: Letter from Pamela B. Cowan (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "10 CFR 50.46 Annual Report", dated December 01, 2005.]

The referenced letter provided a 30-Day 50.46 report for Units 2 and 3. This letter reported a newly discovered sensitivity to the assumed axial power shape for small break LOCA cases. This sensitivity may result in higher calculated PCT values for top-peaked axial power shapes. Due to this sensitivity, the calculated PCT for Peach Bottom was higher than the previously calculated value. The PCT impact was determined to be 150⁰F for GE14 fuel. The 0.08 ft² Small Break in a Recirculation Discharge Pipe is the Licensing Basis PCT event for Peach Bottom for GE14 fuel.

[Reference: Letter from Pamela B. Cowan (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "10 CFR 50.46 30-Day Report", dated August 22, 2006.]

6. Current LOCA Assessment

None